

Mansfield Primary Academy- Design and Technology Curriculum

Throughout Design and Technology at Mansfield Primary Academy, we...

EYFS- Early Learning Goal for Expressive Arts and Design

ELG 16 Creating with Materials

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used.
- Make use of props and materials when role playing characters in narratives and stories.

ELG 17 Being Imaginative and Expressive

- Invent, adapt and recount narratives and stories with peers and their teacher.
- Sing a range of well-known nursery rhymes and songs.
- Perform songs, rhymes, poems and stories with others, and (when appropriate) try to move in time with music.

Nursery

- Draw designs before making models.

Reception

- Begin to add labels to designs.
- Share their creations, explaining the process they have used.

	Autumn1	Spring1	Summer1
Year 1	MATERIALS - Pop up book about MANSFIELD build structures, exploring how they can be made stronger, stiffer and more stable	CONSTRUCTION- Futuristic Fire engines - build structures, exploring how they can be made stronger, stiffer and more stable	FOOD- Medieval banquet - use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from
Year 2	MECHANISMS Make a vehicle that can travel across sand Comparison – make a vehicle that moves across sand explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	FOOD- Explorer’s packed lunch - use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from	CONSTRUCTION make a bridge, test it with a train build structures, exploring how they can be made stronger, stiffer and more stable
Year 3	FOOD-Stone Age Meals	CONSTRUCTION- Garden planters - apply their understanding of how to strengthen, stiffen and	Mechanics – How can we move water uphill? Shadoof

	- understand and apply the principles of a healthy and varied diet	reinforce more complex structures	- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Year 4	TEXTILES- Design a bag for the Olympic games – logo and bag. select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities	CONSTRUCTION- Shields – - apply their understanding of how to strengthen, stiffen and reinforce more complex structures - - Materials – using fabrics/ renewable materials – starch/etc	CONSTRUCTION Anglo Saxons - Design a bird hide Apply their understanding of how to strengthen, stiffen and reinforce more complex structures -
Year 5	MECHANICS- Tanks/Vehicle understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	Food - Monarchs Caribbean Mocktails understand and apply the principles of a healthy and varied diet	MATERIALS- -China – paper making – make a Chinese lantern select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
Year 6	CONSTRUCTION- Shelter: global warming apply their understanding of how to strengthen, stiffen and reinforce more complex structures	ELECTRONICS- Warning system - understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	Textiles – Designing a waistcoat for prom select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Progression of Skills						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food	Cut, peel or grate ingredients safely and hygienically	Measure or weigh using measuring cups	Prepare ingredients hygienically using appropriate utensils.	Follow a recipe. Assemble or cook ingredients	Understand the importance of correct storage and handling	Demonstrate a range of cooking techniques. Create

		or electronic scales. Assemble ingredients.	Measure ingredients to the nearest gram accurately. Follow a recipe.	(controlling the temperature of the oven or hob, if cooking).	of ingredients. Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.	and refine recipes, including ingredients, methods, cooking times and temperatures.
Materials	Cut materials safely using tools provided. Measure and mark out to the nearest centimetre.	Demonstrate a range of cutting and shaping techniques (tearing, cutting, folding and curling). Demonstrate a range of joining techniques (gluing, hinges, combing materials to strengthen)	Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre.	Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material. Select appropriate joining techniques.	Cut materials with precision. Refine the finish with appropriate tools (such as sanding wood after cutting).	Refine the finish with appropriate tools (such as sanding wood after cutting). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape.
Textiles		Colour and decorate textiles using a number of techniques (dyeing/ adding sequins/ printing).	Join textiles using running stitch. Select the most appropriate materials to decorate textiles.	Join textiles with appropriate stitching. Select the most appropriate materials to decorate textiles.	Create objects that employ a seam allowance. Join textiles with a combination of stitching techniques.	Join textiles with a combination of stitching techniques. Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles.
Electronics	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). (Covered in computing)	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	Create series and parallel circuits.	Create series and parallel circuits.	Create circuits using electronics kits that employ a number of components (LEDs, resistors, transistors and chips)	Create circuits using electronics kits that employ a number of components (LEDs, resistors, transistors and chips)
Computing		Model designs using software.	Control and monitor models using software designed for this purpose.	Control and monitor models using software designed for this purpose.	Write code to control and monitor models and products.	Write code to control and monitor models and products.

Construction	Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	Choose suitable techniques to construct products to repair items.	Strengthen materials using suitable techniques.	Develop a range of practical skills to create products (cutting, drilling, screwing, nailing, gluing, filing, sanding)	Develop a range of practical skills to create products (cutting, drilling, screwing, nailing, gluing, filing, sanding)
Mechanics	Create products using levers, wheels and winding mechanisms.	Create products using levers, wheels and winding mechanisms.	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (levers, winding mechanisms, pulleys and gears).	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (levers, winding mechanisms, pulleys and gears).	Convert rotary motion to linear using cams.	Use innovative combinations of electronics and mechanics in product design.
Design, make, evaluate	Design products that have a clear purpose and an intended user.	Make products, refining the design as work progresses.	Design with a purpose by identifying opportunities to design. Make products by working efficiently by carefully selecting materials.	Make products by working efficiently by carefully selecting materials. Refine work and techniques as work progresses, continually evaluating the product design.	Design with the user in mind, motivated by the service a product will offer. Make products through stages of prototypes, making continual refinements.	Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout History	Explore objects and designs to identify likes and dislikes of the designs.	Explore how products have been created.	Identify some of the great designers in all of the areas of study to generate ideas for designs. Improve upon existing designs, giving reasons for choices.	Identify some of the great designers in all of the areas of study to generate ideas for designs. Improve upon existing designs, giving reasons for choices. Disassemble products to understand how they work.	Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Create innovative designs that improve upon existing products.	Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience.

Progression of Vocabulary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food	fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients	fruit and vegetable names, names of equipment and utensils, soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients	varied diet, fat, sugar, carbohydrate, dairy, protein, vitamins, nutrients, nutrition, equipment, healthy, name products, utensils, techniques, ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, greasy, moist, cook, fresh, savoury, hygienic, edible, grown		ingredients, yeast, dough, bran, flour, whole meal, unleavened, baking soda, spice, herbs, healthy, varied, gluten, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	
Mechanisms		vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating, slider, lever, pivot, bridge/guide, mechanism, linkage, slot, bridge, guide system		pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output	
Electronics						reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder,

						battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device Parallel circuit, series circuit
Materials/ Textiles	scissors, needle, thread, wool, cotton, template, decorate, weave, print, cut, fold joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish			seam, seam allowance, sewing machine, hand stitch, machine stitch, manipulate, measure, accurate, mark, pin	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, pins, needles, thread, pinking shears, fastenings.	allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, pins, needles, thread, pinking shears, name of textiles and fastenings used.
Construction	cut, fold, join, wall, tower, weak, strong, base, top, thinner, thicker, straight, curved, bendy, metal, wood, plastic circle, triangle, square, rectangle.	Fix, structure, framework, cuboid, cube, cylinder, underneath, side, edge, surface, corner, point, vehicle, wheel, axle, axle holder, chassis, body	Three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, recycle.	scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision.		frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent
Design Make evaluate	investigating design, evaluate, make, user, purpose, ideas, product,	investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function	user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing	evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning,	design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype	function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype

				annotated sketch, sensory evaluations		